

Zotero: Making Student Research Transparent

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Research and prewriting practices are incredibly difficult to teach at a distance. By engaging students with a research tool that externalizes these processes it is possible for distance educators to offer concrete feedback and assessment of these process. This presentation will demonstrate Zotero, a free Open Source research tool that offers an agile means to facilitate these practices.

Facilitating Student Research Process At A Distance:

Some of the most crucial stages in the research process occur before composing a draft. Researchers gather, organize, analyze, and annotate source material before composing their thoughts. It is difficult to scaffold students into this kind of skill set in one-on-one, face-to-face mentorship, and far more difficult to teach these skills at a distance. This paper suggests two strategies for using Zotero, a free and open source Firefox extension, as tool to help facilitate these pre-writing practices. While not developed specifically for this purpose, Zotero is already proving to be an asset for many distance educators. This paper discusses two ways in which Zotero is being used to enhance student research. First, as a tool that passively distills best practices of actual researchers in it's interface and second, as a tool to allow teachers to peer into students' pre-writing research practices through research reports. Before explaining how Zotero can be used to model these kinds of practices it is best to understand a bit about the development and history of the Zotero project.

Background on Zotero:

Zotero is an easy-to-use yet powerful research tool that helps researchers gather, organize, and analyze sources (citations, full texts, web pages, images, and other objects), allowing them to share the results of their research in a variety of ways. The project emerged from researchers' at the Center for History and New Media frustration with existing bibliographic and research software. These researchers sought grant funding to develop a tool that suited their daily research needs and practices. Developed by practicing scholars to reflect best practices for research in their own research Zotero is markedly different than previous tools. Over the last two years the tool has been refined through an extensive public beta and full release, generously funded by the United States Institute of Museum and Library Services, the Andrew W. Mellon Foundation, and the Alfred P. Sloan Foundation. With over 200 members in it's open source development community and refinements from over 3000 students and scholars through Zotero's public forums, the project has attracted more than half a million users from around the world. The current configuration and interface demonstrates Zotero's rapid success. Scholars and students have rapidly embraced the tool which they saw as a much more natural fit to their research practice. Modeled on best practices of actual researchers, the tool offers exciting potential to bootstrap students into those practices. Zotero's interface now passively suggests those best practices to novice users.

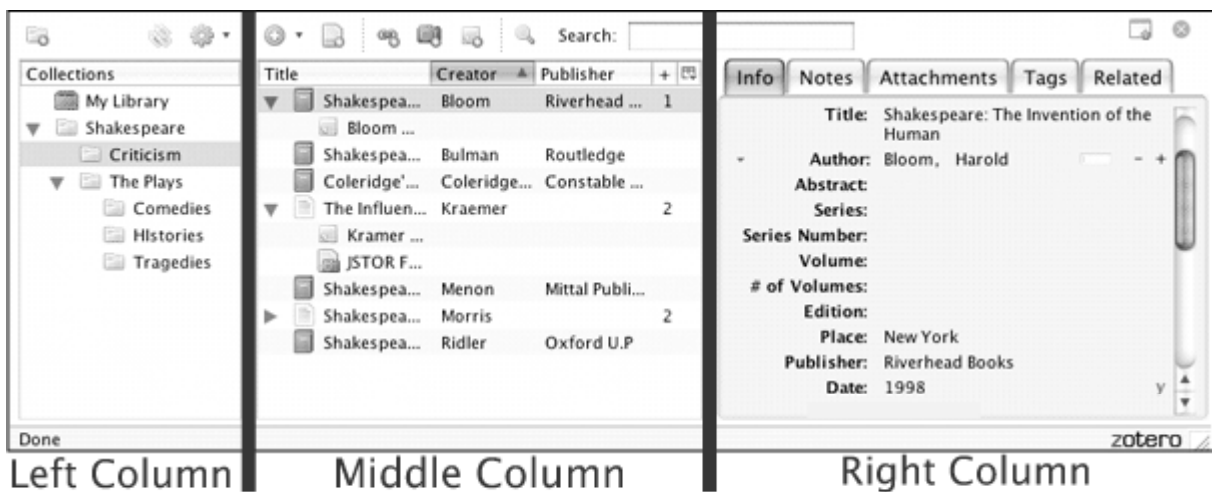
The Interface:

The web is increasingly becoming students' and scholars' portal to research materials. Thus it is quite natural that research tools that engage with those research practices should "plug-in" to the browser if they want to engage with the research practice. Just as no one would ask a researcher to leave their notebook outside the library—running back and forth from their research materials to their notes— no one should demand that researchers today leave the browser to analyze, annotate, and otherwise manipulate their research materials. As students search through catalogs and resources, Zotero offers visual cues to archive and save the items they find online. When Zotero "senses" a bibliographic reference it alerts the user through an icon in the location

bar. In the image below, Zotero senses a book in the Library of Congress catalog. By clicking the icon the user captures the bibliographic record in their Zotero collection, allowing them to manipulate it through Zotero's iTunes-like interface.



Once students capture items the high visibility of note-taking, tagging, and organizational features underscore the necessity of those activity in the research process. The three panes are a visual metaphor borrowed from iTunes, refer to the image of the Zotero pane below for more details. In the farthest pane on the left, students can create collections to organize their research around projects. In the middle pane they see the items within a given collection, and on the right side of the screen they see the specific information about a given item.



Through all these features, sources take center stage. By orienting the entire program around reference items, Zotero helps focus projects on supporting source material. As students use these features they externalize many of the internal thought processes that eventually supply the backbone for their writing. Taken together these features, refined through usage and recommendations from hundreds of thousands of professional researchers, hold the potential to scaffold students into those researchers best practices. While already quite useful these passive interface features are only the beginning of Zotero's power to facilitate pre-writing processes via distance education. Zotero's ability to generate detailed reports offers an excellent opportunity for teachers and facilitators to assess, critique and encourage strong research and prewriting skills.

Externalizing the Research Process Through Reports:

Zotero allows users to generate reports using HTML documents that include the totality of information about their work. When students generate a report of their entire collection it generates a document they can send to their instructor that offers a snapshot of their entire research process. See the example report below.

The screenshot shows a web browser window titled 'Zotero Report'. The address bar contains the URL 'zotero://report/items/13474/html/report.html'. The main content area displays the following information:

AC Bradley and his influence in twentieth-century Shakespeare criticism

Type	Book
Author	Katherine Cooke
Publisher	Clarendon Press
Date	1972
Date Added	Tue Mar 27 19:50:40 2007
Modified	Tue Mar 27 19:50:40 2007

Notes

AC Bradley's 1904 lectures on Shakespearean tragedy are deservedly regarded as classics of criticism. His analysis of Hamlet is deservedly famous, particularly his discussion of the famed problem of Hamlet's delay.

He classifies theories of the delay into several large categories. First are those that suggest that Hamlet delays mainly or primarily because of external circumstances - the risks of moving ahead with only the ghost's word for it, the need to bring the King to public justice and therefore the need to expose the king's guilt before the entire court, and so on. Bradley says that the theory is plausible until one reads the play. Contrary to this theory, Hamlet never describes any external obstacles to the execution of the ghost's instructions, assumes he has the means and the right to carry out those instructions, he never speaks of intending to bring Claudius to public justice.

A second sort of theory attributes Hamlet's delay to moral scruples. Bradley admits that Hamlet attributes the delay in part to conscience (5.2.63ff) but that this is neither nor the main reason cited for the delay. Further, Hamlet appears in the main to consider killing Claudius a moral duty. One might shift the ground a bit to suggest that Hamlet is unconsciously ambivalent about this duty: "in the depths of his nature, and unknown to himself, there was a moral repulsion to the deed." Bradley considers this a stronger position, but cannot accept it for a variety of reasons, among them the assumption that the ghost's instructions are

Done zotero

When a student generates a report of their entire collection, Zotero produces a document containing information about all the resources they have gathered, all the tags they have assigned to them, all the notes they have taken about those resources, the date the student added resources and information on the databases and sites the student gathered their sources from. In short, these full reports offer facilitators an easily generated complete externalization of much of the students pre-writing research activities. A facilitator sees, at-a-glance, if the student has been gathering, annotating and analyzing sources from a variety of repositories for weeks or if they simply grabbed 10 books from a single database at the last moment.

Conclusion:

Digital tools like Zotero hold promise for teaching research skills to students at a distance. This paper presented two ways in which Zotero is being used to both passively and intentionally reinforce best practices for student research. While Zotero has not been explicitly developed for these ends the tool has made found an important role in distance learning.. These features, however, are only the beginning of Zotero's potential in this field. As an open source, community driven project Zotero represents the best efforts and collaboration of scholars and researchers from around the world. If more individuals involved in distance education engage with the Zotero community I have no doubt that Zotero could expand and refine the feature set Zotero offers to distance educators. Furthermore, because Zotero is a fully extensible research platform, it offers an additional value to developers and granting agencies. Several other institutions have already won grant funds to extend Zotero's feature set for specific audiences and circumstances. There are a number of features and enhancements which other institutions could build on top of Zotero to further customize it for the unique needs of distance education.

About the Presenter

Trevor Owens is the Community Lead for the Zotero project at the Center for History and New Media (CHNM). Before joining CHNM Trevor worked with the Games Learning and Society conference. He is interested in the possibilities for historical games in teaching and learning, and the ways games and interactives are being used by museums and educational institutions, and the history of science in children's books.

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